

Abstract

The current invention is directed to micro-stencil devices and methods. A micro-stencil, in accordance with this invention, comprises a patterned stencil membrane formed from a polymeric layer patterned with stencil features preferably having lateral dimensions in a range of 10 micron to 100 nanometers or less. The micro-stencil preferably includes a porous backing membrane coupled to the stencil membrane to control the flow of print fluids, to allow for two-way flow of print fluids and/or curing gases during a printing operation. The stencil membrane is preferably configured to directly print the stencil features onto a suitable print medium surface. The micro-stencil of the instant invention, is preferably utilized for printing structures comprising interconnected layers, such as micro-circuits, and/or structures comprising polymer arrays.